

# EXHIBIT 8

## Chapter 2

### **You Need a Plan: *Preparing for Content***

Attempting to build anything without a plan will surely lead to lots of backtracking, lost time, and headaches. Not only can a plan keep you on track, it can also allow you communicate your ideas to others and provide an excellent reference when it comes time to make design decisions. When we build a Web site, we need to think through the organization, navigation, personality, and limitations of our site. Ironing out these issues before jumping into the production stage can save us time and ensure that we end up with a site that “speaks” our audience’s language.

## Organizing Your Site

From libraries, to books, to sentences, we make sense of our surroundings through organization. We organize our houses into rooms and our cities into neighborhoods. No matter how full our homes get, or how big our cities grow, we can still find what we need in them, because they are organized in a manner we can understand. It would be quite difficult to find your way in a city that sometimes used numerical addresses, occasional color-coding, and an irregular system based on building height. The lack of a clear, consistent organization system would leave most people lost and confused.

### Space-less

Unlike books and cities, the Web lacks any “real” physical structure. As a result, Web users are often landmark-less and unable to understand “where” they are within a site.

But even in a city with a very perplexing organization system, we might still be able to find our way around using spatial clues. (“I remember passing by the red building earlier. If I turn right at this corner, I might get to where I am going.”) Online, our audience has no such “last resort” to get them where they need to be. Though we refer to groups of Web pages as “sites,” there are no physical landmarks to fall back on for guidance<sup>1</sup>. Worse still, Web users have few clues to tell them “where” a clicked hyperlink may take them. Links could lead to a different site, further down the page (in the case of inline links), or they could open a new Web browser window (quickly becoming a common practice with today’s Web advertising) or begin downloading a large file. Given these possibilities and the lack of spatial cues on the Web, it is especially important that our organizational systems be well thought out and meaningful. They need to accurately outline the content of our sites in a manner appropriate to our audience.

The manner in which your site is organized allows your audience to understand what they can expect to find within. It also provides them with an overall awareness of the big picture: your site’s main message. Upon encountering a site with organizational categories such as fish, dogs, cats, birds, and so on, you might easily guess you were at a pet store. The organization of the site helps to communicate the purpose of the site: “I am a pet store with ... available for your pets.” Though this may seem like an obvious point, there are many Web sites where the message is not clear and may leave you wondering if you are at a boutique or a bakery.

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<sup>1</sup> A number of authors have discussed the lack of any real “space” on the Web, including Colleen Bushell (1995), Peter Morville & Louis Rosenfeld (1998), Patrick Lynch & Sarah Horton (1999), and Steve Krug (2000).

**When you don't want organization**

At the old vinyl shops, where records sit in massive piles on the floor, it can be a rewarding experience to spend time sifting through the LPs. Occasionally, you will come across something you didn't know existed or would have never thought to look for. The lack of organization, in this case, works to your benefit, allowing you to discover and explore. For certain Web sites, it might be a good idea to mimic this type of experience.

Some e-commerce stores do it in the form of "recommendations:" putting a list of items related only by your interests on a page customized for you, and allowing you to browse through them. These are far from the "flea market model" of sifting through heaps of items for something that catches your eye. But these days, few people have the time required for flea market shopping, precisely because it can be a very engaging experience.

A well-organized site not only "tells" your audience what they can find within, it tells them where they can find it. When we have categories and alphabetical listings to help us, it's much easier to find a CD at the local music store. Imagine trying to locate a Charlie Hunter disk in a store where all the CDs just lie in random piles on the floor. I have actually encountered several LP stores that use this method, and unless you enjoy sifting through piles of dusty vinyl looking for a gem (and you have the time), you are better off at the CD store. Though the LPs are theoretically "organized" (into piles on the floor), you have no way of predicting where a particular disk might be. Only after you look through a pile can you say, "I guess it's not in there." The organized store, on the other hand, allows you to find the right information in a predictable manner. Charlie Hunter would be in the jazz section, under *H*. With organization, knowing where to look is easy. Without organization, even a site with great presentation and interaction will ultimately confuse your audience.

**Sort your information**

The simplest form of organization is also the most frequently used: the sorting of similar objects into categories or sequences. It is the simplest because, often times, objects "want" to be together. Forks, spoons, and knives, together at dinnertime, invite grouping. They often share the same size, texture, color, and, most importantly, function. As a result, in most homes, these utensils share a drawer in the kitchen. It would be strange to have the forks and knives in one drawer, and the spoons on the third shelf from the bottom of the vanity in the downstairs bathroom. Not only do the objects themselves imply that they are of the same category, but most people expect them to be. Few guests would think to look in the downstairs bathroom for the spoons. More than likely, they will look in the drawer with the forks and knives, perhaps check a few more kitchen drawers, and finally assume that you have no spoons. You can expect the same behavior from your Web visitors. They will look in the categories where they expect to find the information they need. And if they can't find it, they will assume it doesn't exist. When organizing our Web sites, we need to make sure that our categories and what we put in them make sense for our audience and our content. We need to "tell" our audience what they can expect within each category.

Most categorization moves from general to specific. (House wares > Kitchen utensils>Forks>Dessert Fork)

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This allows us to transfer our knowledge of top-level categories to those below them and thereby increase our understanding. If we know kitchen utensils belong in the kitchen and we know a fork is a kitchen utensil, then we know forks belong in the kitchen.

Though this is a deliberately simple example, the same basic model remains intact for more complex information and is especially helpful when you encounter items with which you are not familiar. (Ahhh, I see, GoLive is a Web design software product. I know this because I followed the path: Products>Software>Web design>GoLive.) Higher level categories can provide valuable clues about objects and their function, and they can also give users a sense of where they are in an organized structure and, more importantly, why.

Organizing information from general to specific also carries the benefits of *progressive disclosure*. Information is much easier to absorb when it comes in smaller, related “doses.” This is especially important online where our screens are limited in size and reading large amounts of text is not favored by most people. (Instead, a common solution is to print large portions of text.) Progressive disclosure provides you with the portion of information you want when you’re ready for it. For example, when reading about a software product online, you first want the overview. Once you understand the intent of the software, you can get to the specifics of how to use it to get your work done (see sidebar below). Therefore, it makes sense that the technical specifications reside in a subcategory of the software product. By reinforcing the relationships between information, we can provide clear routes our audience can follow to get the information they need without forcing them to sift through irrelevant material. But, in order for our audience to be able to follow these paths, they must be logical and well labeled.

### Categories: What have they done for you lately?

>Make finding information easier and faster

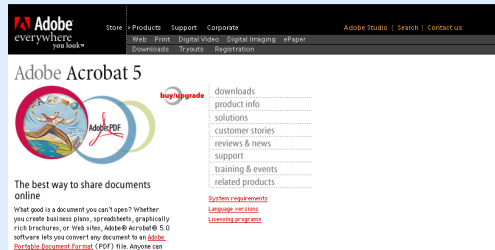
>Divide information into smaller, easier to “digest” portions.

>Emphasize the similarities between information.

>Point out the differences between information.

>Provide “paths” to information.

### Now I want..



Dividing information into meaningful portions allows you to get the answers you need without having to analyze large quantities of extraneous material. Once you understand the basics about Acrobat (it is a program for creating PDF files), you can follow the links to the right to learn more about the product. Are you interested in reviews, customer stories, training, or news? The division of Adobe’s information about Acrobat not only lets you make the right choice, it also provides you with an understanding of what is available.

### Accommodate your audience

When deciding on category labels, keep your audience's expectations in mind. Are they familiar with the terms you're using as labels? Do they associate the terms you use with the content under each category? Try to avoid labels that cause your audience to ponder what they might find within each subsection of your site —unless you actually want your labels to be a bit mysterious to encourage the exploration of content your audience otherwise might never see. (More on this in Chapter 6.) Your audience and their goals should determine the method of categorization you use.

#### Everybody's doing it

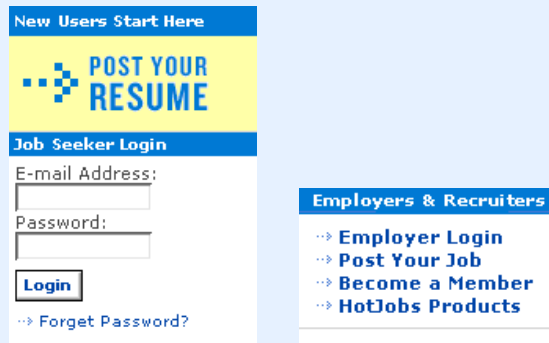
When you spend some time on the Web, you will find that the most self-explanatory labels for content are the ones pretty much every site uses. Labels such as "Jobs," "Products," "Support," "Store," and "About Us" show up on almost every business site. Though this is good for consistency (see sidebar page 13), you may begin to ask yourself, "How can I keep my company unique and still have clear labels?" The answer lies in visual presentation and Chapter 5.

#### Look at those labels

Labels can be based on topics, user tasks, a site-wide metaphor, specific audiences, or a linear sequence<sup>2</sup>. Take a look at differences in these labels from three different job-search sites.



The labels in this portion of Monster.com are based on user tasks emphasized by the use of verbs: post, start, and search.



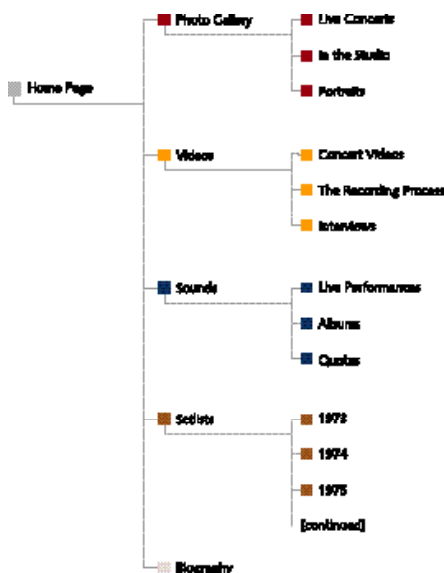
The HotJobs.com site labels these portions of their organization for specific audiences: new users, job seekers, and employers.



This portion of the Headhunter.net site is organized by topics: resources, news, events, and so on.

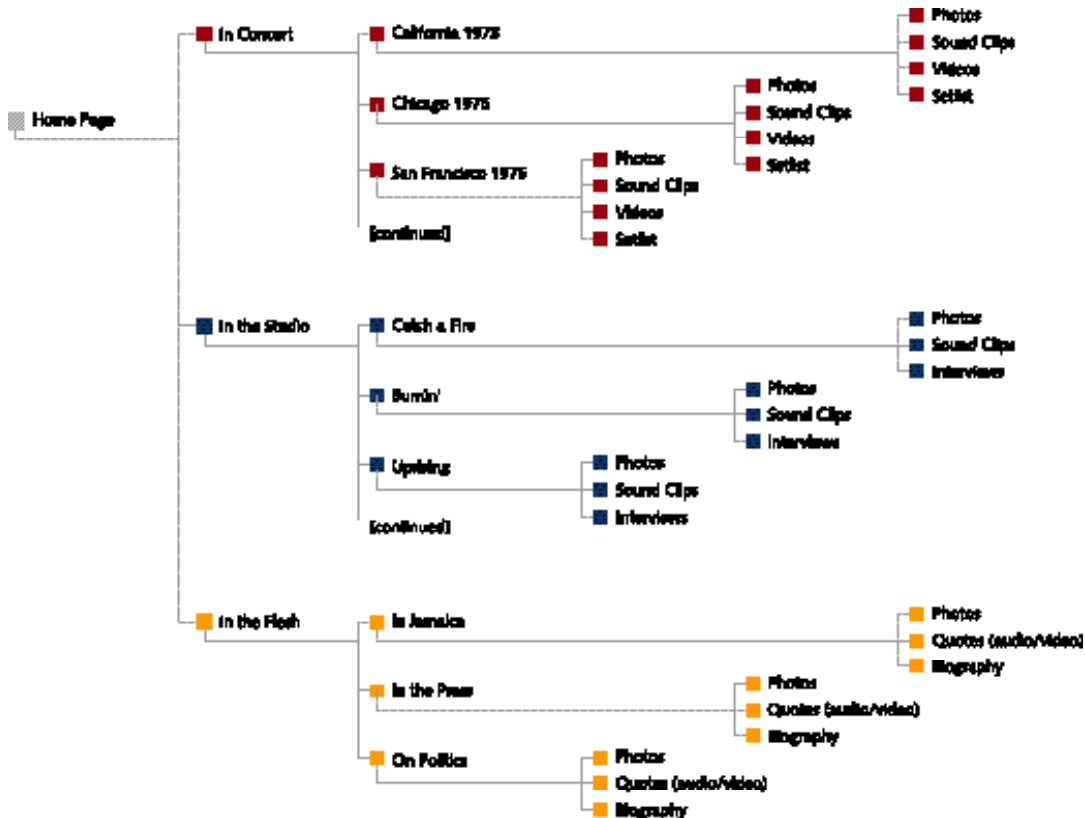
<sup>2</sup> Peter Morville and Louis Rosenfeld outline these types of organization in their book: *Information Architecture for the World Wide Web*.

### Division isn't always boring

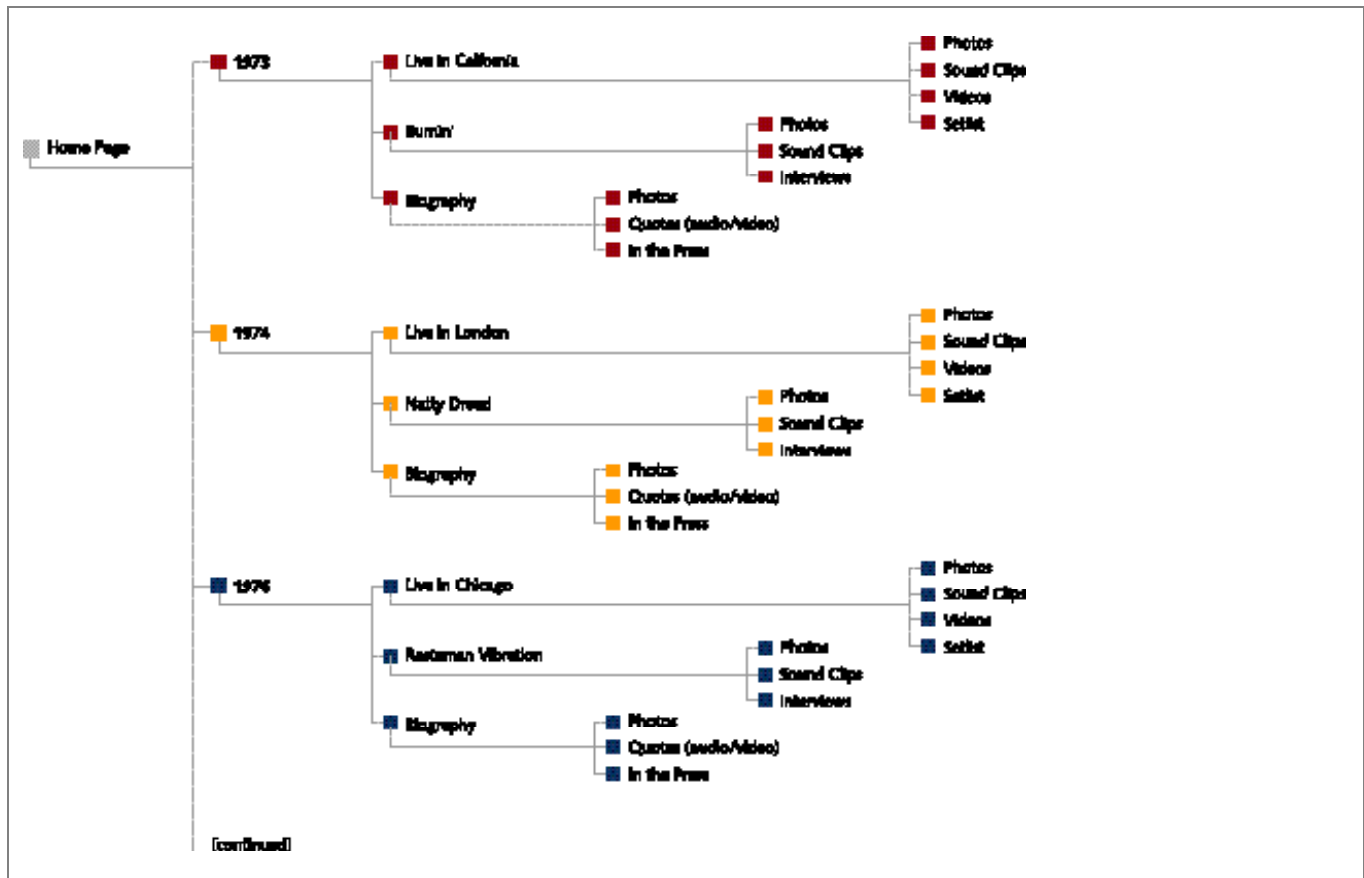


Often times, the way we organize our sites can make them unique or inviting. In the Bob Marley fan site outlined below, the basic content consisted of photographs, sound clips, videos, concert setlists, and biographical information. A simple and easily understandable organization structure might have been Photos, Videos, Sounds, Setlists, and Biography. Such an organization (on the left) makes it very clear what a visitor might expect to find in the site. However, the site exists for entertainment purposes and focuses on the life of Bob Marley, not on different types of media (photos, videos, sounds). Therefore, the organization system below might be more appropriate.

The site is divided into three categories: In Concert, In the Studio, and In the Flesh. Each section contains a mixture of photos, sounds, and videos from one of these aspects of Bob Marley's life. As you explore the site, you catch glimpses of how Bob spent his time, and where. The experience is much more immersive and might be enhanced even further by introducing linear narratives within each subsection (though this might be detrimental to specific searching). Another alternative is using a chronological organization system, which mirrors the course of Bob's life more accurately (facing page).



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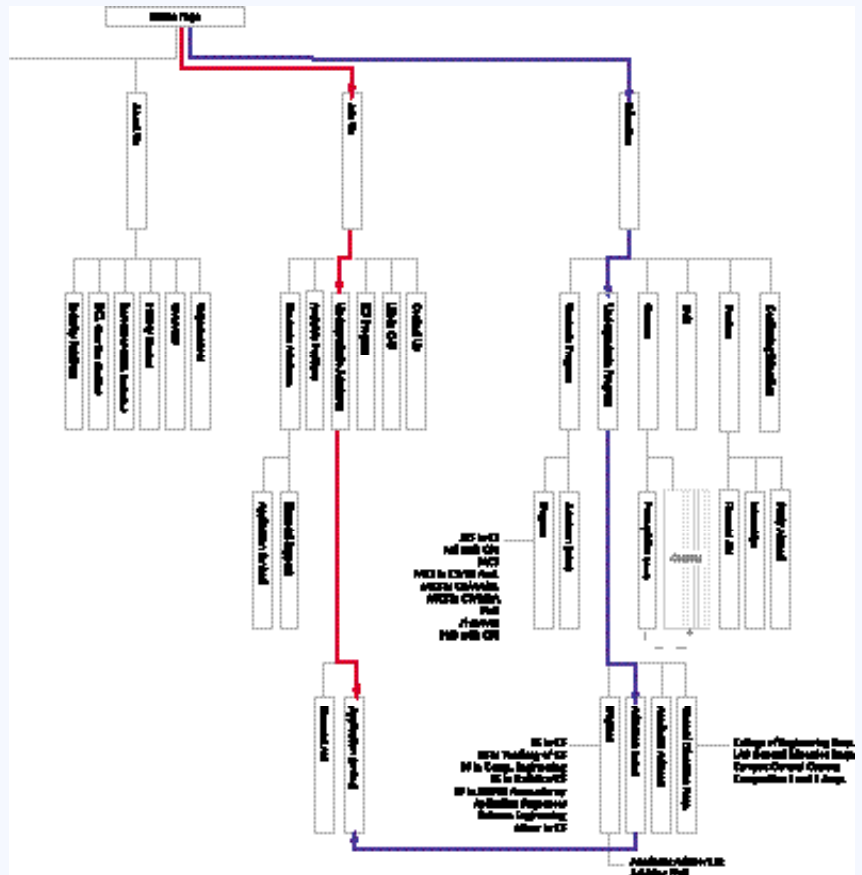


It is also valuable to note the manner in which your audience is most likely to seek out information. Most often, your Web visitors will switch from searching for specific content to casual browsing of your site. They might come in looking for an exact make and model of bicycle and eventually end up reading user reviews of tires. Or conversely, they might come to browse through your product reviews and end up looking for a specific bike mentioned in an article. Your organization system needs to support both types of activity. This is where the user profiles and scenarios we discussed in the last chapter can really come in handy. When you have an initial organization system put together, try wading through it as one of your “fictional” users. Does it make sense from this particular user’s viewpoint? Can they find what they need? Is it easy for them to switch from casual browsing to specific searches?



## Walkthroughs

When you have an initial organization for your site in mind, try it out on one of your user scenarios (Chapter 1). Remember to account for different users and goals, as well as the occasional mistake. Not everyone will understand your organization immediately.



In this subsection of a site organization, two possible paths for accessing the online student application form are laid out.

Another possibility you need to consider is that visitors to your site might **not** know exactly what they are looking for, which is where progressive disclosure and logical categories fit in. By starting in a very general area, uncertain users can gradually dig deeper into your content until they find something to their liking.

When you understand your audience and their goals, you will have a good idea of how they expect information to be organized. To this end, you might even consider letting them organize it for you. Getting a member of your target audience or simply an outsider (a friend, a neighbor) to comment on how you have decided to organize your content is frequently an eye-

opener. Often, we become so well versed in the content of our sites that we begin to see connections that most people do not instinctively make. Or worse still, we miss the obvious relationships because we are too focused on the little details. A simple way to get input from others is to ask them to do a card sort of your content. Ask your test subject to group a set of index cards (one for each part of your content) into categories that make sense to them. Then ask them to prioritize the groups by importance. You might just be surprised by the results. Testing several people (see sidebar) in this way will give you invaluable insight on how your audience expects your content to be organized. After all, we are doing all this for them.

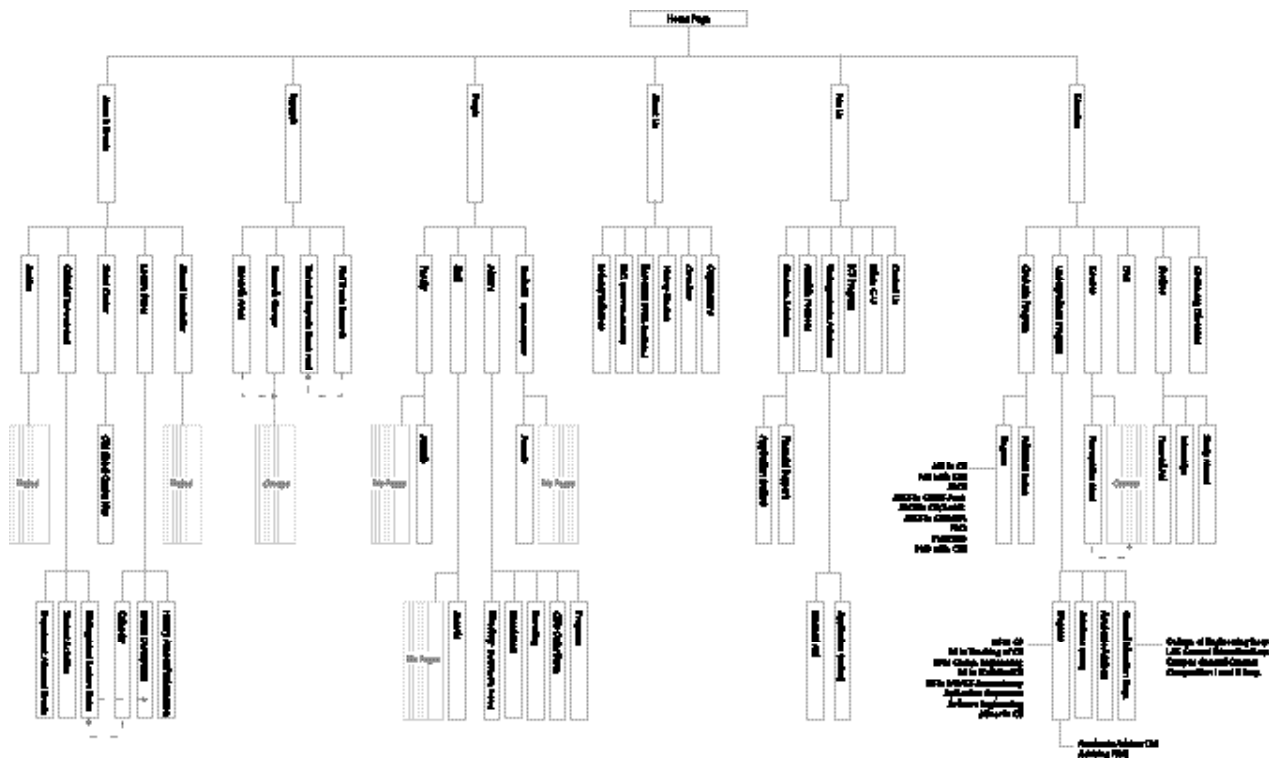
#### **This is a test. . .**

There is no substitute for input from a target audience member or an outsider. Whether you're developing the organization, labels, or visual presentation of your Web site, do some user testing to make sure that you are on the right track. There is often no need for elaborate or expensive testing schedules; simply getting opinions from potential users or "outsiders" is often enough to catch usability problems. Testing often and early will save you time and trouble in the long run. This book does not cover usability testing in depth; however, Steve Krug and Jacob Nielsen have published great material on "quick and easy" user testing that I recommend reading if you want more information.

#### **Visualize it: Schematics**

When you walk away from the organization process, remember to take home a reminder of the decisions you made. Preparing a visual representation of at least the most important portions of your organization will help you see the "big picture" and help you explain your plan to others. Frequently, this visual representation takes the form of a *tree diagram*. In a tree diagram, each successive level of categorization follows below its "parent" and most often corresponds to a mouse-click. (It would usually take three mouse clicks to get to the fourth row of the tree diagram). By looking at a tree diagram, you can usually tell whether a site's organization is balanced: not too shallow or deep. According to the Patrick Lynch and Sarah Horton, authors of the *Web Style Guide: Basic Design Principles for Creating Web sites* (1999, Yale University Press), sites with a shallow organization system consist of long menu listings, and can often confuse users with too many unrelated options. Sites that are too deep obscure content below multiple levels of short menu listings. Neither is a good depth to be swimming in. Most experts suggest presenting no more than seven options at any given menu level. Less is better, but there may be a *few* times when more is appropriate.

## Seeing Trees



This sample tree diagram outlines the basic structure for the Department of Computer Science at the University of Illinois at Urbana-Champaign (UIUC) Web site. Cross-linking is indicated through dashed lines only when the link is crucial to the organization. Otherwise, the majority of hypertext cross-links and external links are not shown. This keeps the focus on the main organizational issues. Also note that the lines of the diagram are deliberately light in color. The emphasis in tree diagrams should be on the categories and their labels, not on the boxes around them.

## Navigating Your Content

Having a great organization won't help much if you're the only one who knows about it. You need to "tell" your audience how your site is structured so that they can easily get to the things that interest them: You need to supply them with navigation. The navigation elements of a Web site provide your audience with an understanding of your organization and give them a sense of where they are within the site structure. Navigation elements include, but are not limited to search boxes, horizontal and vertical menus, indexes, tables of contents, site maps, directories, charts, hypertext links, and anchor links. These elements can be global (pertaining to the whole site) or local (pertaining to a subsection or individual page of the site). Most sites do not just pick one navigation element and go with it. Rather, they use a combination of several elements in order

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to accommodate different user preferences. This book, for example, can be searched through the table of contents, page numbers, the index, and more. Regardless of which navigation elements you choose to use on your site, they all serve the same purpose: orientating your audience.

When users feel “lost” on the Web, it’s because the navigation isn’t doing its job. Navigation should let your audience know where they are, how they got there, and where they can go next. Any useful system for finding your way around, whether in a Web site or a city, should allow you to backtrack, plot your next move, and understand your position. Well-made maps, written directions, and signage systems all make this possible. Through visual and verbal clues, these navigation tools provide us with clear messages that guide and direct us to our destinations. The best way to avoid having users that “can’t find what they’re looking for” is to have an approachable navigation system that “tells” your audience how to get around your site. We’ll spend some time looking at how visual communication principles can assist in making this possible in Chapter 6. But for now, we’ll just look at some of the key attributes of navigation systems and the planning we can do to ensure that we’re on the right track.

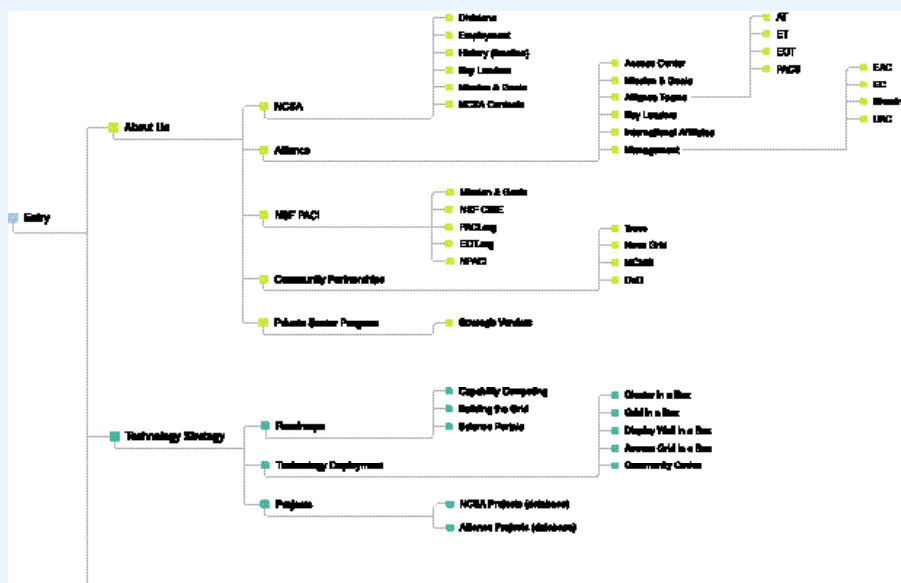
**Getting around the site**

Usually, the main navigation system is your site’s organization progressively revealed in visual form. I say progressively, because each level of information in our schematics most often translates to one set of navigation menu options. And while the first level of navigation should show up on every page in our site, putting the entire organization on each page is likely to add lots of clutter and just confuse our audience. As a result, we frequently reveal each level of organization only when a user selects its “parent” category.

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**Presenting Levels**

Usually, each level of your organization translates to one set of navigation menu options on your Web site.



**About Us**

- NCSA
- Alliance
- NSF PACI
- Community Partnerships
- Private Sector Program
- Technology Strategy**
  - Roadmaps
  - Software Deployment
  - NCSA Projects

Home > About Us > NCSA

Divisions

Employment

History

Key Leaders

Mission

NCSA Contacts

The National Center for Supercomputing Applications, one of the five original centers in the National Science Foundation's Supercomputer Centers Program and a unit of the [University of Illinois at Urbana-Champaign](#), opened its doors in January 1986. NCSA earned and maintains an international reputation in high-performance computing and networking and in developing innovative software applications. NCSA greatly broadened the user base of remote

Here, we see the first three levels of organization as navigation menu options on the NCSA site.

The first level is included on all the pages within our site in order to provide our audience with a sense of place and security. Your audience will be confident that they can get through your site if they know they can count on a set of consistent links to be there when they need them. In the real world, you're probably more likely to venture into unknown terrain if you have a good map with you. You worry less about getting lost and trust your choice of paths more. A *consistent* and well-designed navigation system can provide your audience with the same confidence and trust when they venture onto your Web site. Retaining consistency within a navigation system means keeping the location, order, amount, and relative visual characteristics the same throughout the site. A continually moving navigation system with disappearing options is a surefire way to diminish user confidence. Imagine a map where roads disappear only to show up in a new

location. How much would you trust such a map to get you home?

### Site to Site

Keep in mind that you not only need to keep your site consistent with itself, you also need to consider the rest of the Web. Users transfer their knowledge of the Web from one site to the other. If every site on the Web puts their search box in the upper right hand corner and you put yours in the lower left, the majority of your audience will be looking in the upper right. For an interesting study on where Web users “expect” to find site elements, read *Developing Schemas for the Location of Common Web Objects* by Michael Bernard (2001)<sup>3</sup>.

Through consistency, we “tell” our audience that they are within one site. We also provide them with a dependable means for getting to any of our top-level categories. This allows them to backtrack easily and try another path. Other navigation items that should consistently remain on each page of the site are a link to the home page, a site identifier (often putting in double time as a link to the home page), global navigation tools (a search box or a link to the site map), global utilities (e-commerce or intranet tools), and contact information (most sites also include privacy information).

### Consistent navigation

Navigation elements that should be present on “all” your site’s pages are:

- Home page link
- Site identification
- Top level navigation links
- Site-wide navigation tools
- Site-wide utilities
- Contact information

Remember that the Web lacks any real “physical space.” The consistent navigation elements we provide are often the only “you are here” indicators that users get. Therefore, we can’t forget to include them on all our pages. This becomes especially important when someone follows a hypertext link to your site. They bypass the home page and come straight into a random portion of your site structure. How do they know what site they are in? Where in the site are they? What does this new site have to offer them? The consistent navigation elements on your page should put their minds at ease.

Whereas top-level navigation elements orient our audience on a site-wide level, the lower level navigation menus provide direction and awareness within the sub-categories of our site. (A good analogy is using a map of the United States to get you to Chicago and then using a map of the city to get around town.) Within each subsection of our sites, the “subnavigation” elements need to follow the same rules of consistency as our top-level navigation. It might help to think of subcategories as

<sup>3</sup> Bernard Michael L.. (2001). *Developing Schemas for the Location of Common Web Objects*. Proceedings of the 45th Annual Meeting of the Human Factors and Ergonomics Society (pp. 1161-1165). Santa Monica, CA: HFES.

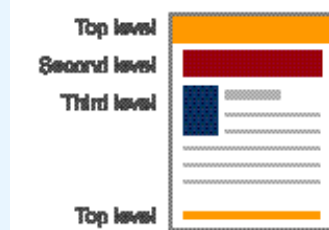
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being “framed” by the larger site. (See sidebar below.) This is all well and good, but once we enter the third, fourth, or even fifth level of our organization, this “framing” can add up to a lot of navigation elements and create confusion rather than alleviate it.

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## Framing your navigation

### Navigation



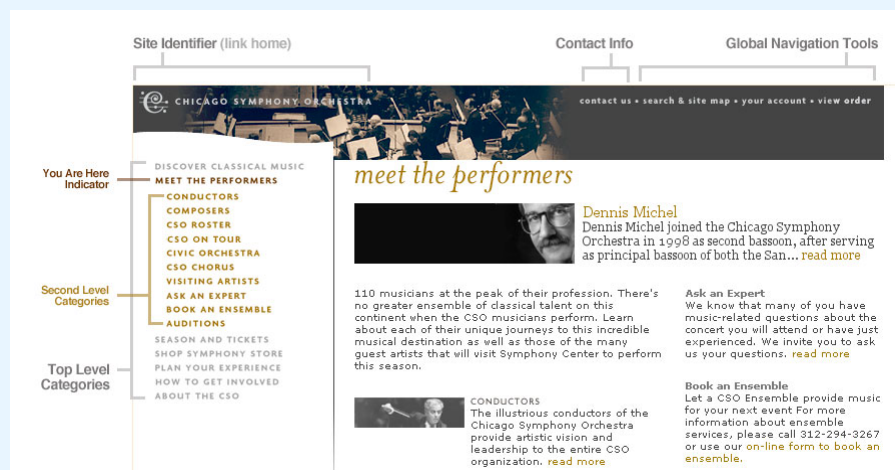
Top-level navigation elements include the site identifier, your first level organizational categories, contact information, and any global utilities (such as search). These elements pertain to the entire site and should be repeated on every page to provide consistency and security. Within a top-level category, the second-level of navigation elements should appear on all pages in a consistent and reliable manner. Once a user enters a third-level category, the top, second, and third level navigation elements are presented on each page, and so on. This “framing” provides users with an understanding of the structure of your site, and where they are within that structure. However, it can begin to add up to lots of navigation and little room for content.

An example of an efficient navigation system that provides awareness without overwhelming the content can be found on Apple’s site (right). Note the use of the “you are here” indicators in both the top and second level navigation menus.



Apple’s global navigation elements also remain consistent at the bottom of each page.

The Chicago Symphony Orchestra’s site uses a vertical navigation system, but the consistent navigation elements remain the same: site identification, contact information, global navigation tools (including e-commerce tools), and top-level navigation links.



## Too much versus too little

Like maps, signage, and directions, most Web navigation systems consist of words, images, and colors (though motion



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and sound are also used to provide clues for moving around a site). Through combinations of these basic ingredients, we provide our audience with an understanding of the scope and structure of our sites. Because the content of our site is made of the same elements (text, images, color), we always need to remember that the navigation elements of the site are simply there to help. They should not overwhelm the page, nor should they distract from the content. If we have relevant and clear navigation (quality), we don't need lots of it (quantity). Yet, it is quite common to encounter large Web sites that get overrun by navigation. Menu systems, search boxes, related links, and advertising links can add up quickly and seemingly "take over" a page. Too many navigation elements not only take away valuable space, but also add clutter and noise.

Your audience did not come to your site for the navigation. They came for the content. *But they can't find the content without navigation!* True, but here is a way out of this catch-22: balance. We need to find the appropriate balance between too much and too little. Too much navigation, and our audience is overwhelmed; too little, and they are lost. Finding the right balance involves thinking twice about the role of each navigation element and its importance to our audience. It also means finding the appropriate visual balance between usable navigation systems and navigation that detracts from the content. One obvious solution is to simply make navigation look like navigation. *Well, what does navigation look like? It seems different on every site.* As the Web has matured, certain "standards" have emerged. One of the most common is that navigation usually sits at the top, bottom, or left side of a page. Therefore, even the placement of elements on our pages can clue users in to their function as navigation. Another way is to use background colors to simulate "buttons." But I'm getting ahead of myself. Chapter 6 will cover the visual aspects of navigation design in more depth.

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**Space Savers**

Navigation menus that require user action before they reveal their contents are a common method of saving space and reducing navigational clutter. The ILIR site to the left uses cascading menus that disclose the next level of navigation links when a user mouses over them.

Breadcrumbs are an increasingly common method of providing situational awareness. They show the path from the home page to your current location.

Another popular solution is to use “space-saving” navigation elements to strike an adequate navigation/content balance. Cascading menus, dynamic user-controlled menus, drop-down menus, and *breadcrumbs* are just a few “space-saving” elements common today. (See sidebar above.) Each of these solutions has its share of benefits and drawbacks, which you need to be aware of before committing your site to one. Probably the biggest disadvantage to most drop-down, dynamic, or cascading menus is that they require user action to “tell” you what they have to offer. A user must roll over the appropriate menu item in a cascading menu or click to activate a drop-down menu. This can be a particular disadvantage when you’re trying to provide your audience with an understanding of your site’s contents or when you’re trying to draw them into certain areas. Breadcrumbs, on the other hand, while providing an account of the path a user followed, do little to provide an awareness of the rest of the site (See sidebar below). If you do decide to use one or more of these “space-savers,” do some quick user testing to make sure that they’re an appropriate solution for your particular audience.

### Drop down the breadcrumbs

[Home](#) > [Folio](#) > [Web Sites](#) > Silver Wrapper Productions

Though breadcrumbs are useful for showing you your position within a Web space, they provide little understanding of the scope of the entire site and offer no navigation choices beyond backtracking and returning home. Steve Krug, author of *Don't Make Me Think: A Common Sense Approach to Web Usability* (2000, New Riders), compares breadcrumbs to written directions: "The directions can be useful, but you can learn more from [a] map." In the example above, from the LukeW.com site, breadcrumbs are combined with drop-down menus to not only provide users with an understanding of their current position, but also an awareness of all the possible paths they didn't take. In the current site implementation, only the portfolio samples use the drop-down method. (If users are interested in one Web design example, it is likely they might want to see more. This navigation features allows them to see the other available samples.) However, the technique could easily be expanded to the entire breadcrumb path (below) to provide a sense of context and scale (where am I, within how much?).

[Home](#) > Folio > Web Sites > Silver Wrapper Productions

Game Design  
Illustrations  
Interface Design  
Multimedia Solutions  
Navigation Systems  
System Architectures  
Web Sites  
Writings

[Home](#) > Folio > Web Sites > Silver Wrapper Productions

When opened, the drop-down menu provides you with a sense of context: where you are and where you can go.

### People are different

People find their way around in various ways. Some prefer written directions in the form of step-by-step instructions; some use particular landmarks to guide them, and others prefer the use of maps. Studies have been done to determine which of these methods has the best effectiveness to effort ratio. For example, having a "mental map" in mind when traversing a city provides you with knowledge of all the streets and their positions. Though finding your way might be quite easy, a lot of mental effort is required. Remembering all the streets and their relative position to each other is quite a chore. On the other hand, memorizing a set of directions is relatively easy. But if you get lost, those directions are not nearly as useful as having a map. The truth is that different ways of getting around are most effective at different times. This is why books have a

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table of contents, an index, and page numbers<sup>4</sup>. You can even flip through the book to look for a particular image or paragraph you need to find. People are also different. Some prefer to use the index, while others can scan the table of contents to determine where they need to go.

A friend that has been to your house several times does not need the detailed directions that an out-of-town cousin might. Your friend might just need to be reminded of your street name, whereas your cousin might not even know how to get into town. The same types of situations are likely to occur on your Web site. Repeat visitors, first-time visitors, visitors that have a solid understanding of your organization, visitors that vaguely remember how they got to a particular part of your site before, and more all come to your site. To accommodate these differences in users and their objectives, we need to have navigation systems that allow for flexibility and that present information in several ways: breadcrumbs to show the path a visitor has taken through the site, search boxes for specific content retrieval, site maps for the big picture, and more. We can even set up landmarks (or “webmarks”) that can help our audience recall where the content they wish to revisit was. Unique images positioned in a consistent manner on pages or the color-coding of various sections of the site can serve as webmarks that can jog our audience’s memory and let them know they’re in the right place or getting close to it.

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<sup>4</sup> Colleen Bushell has published a paper titled *Design Requirements for Hypermedia* (ZED.2, Virginia Commonwealth University, Summer 1995) in which the navigation concepts and uses of traditional information structures (books, maps) are examined to derive guidelines for designing informative hypermedia. One such guideline details the benefits of “showing several different representations of the information space.”

**Look honey, a webmark****Nanomaterials****Cosmology****Chemical Engineering**

Studies of cab drivers in Paris have shown that few have a “maplike” understanding of the city. Instead, they rely on navigating to and from prominent landmarks (or basic point)<sup>5</sup>. Because the Web lacks any physical space, simulating this type of behavior is difficult. However, we can use unique images (positioned consistently) and color-coding to give sections of our Web sites their own unique “webmarks”. Though webmarks probably won’t help you navigate a site the way a landmark might help you navigate a city, they can serve as visual cues to jog your memory and let you know you’re on the right track when you try to find content you have located before (a common and frequently frustrating activity). In the example to the left, icons adorn each of the second level sections of NCSA’s (~100,000 page) Web site and provide a visual cue to let users know what section they are in.

Though multiple navigation elements can add the flexibility needed to accommodate the different searching and browsing patterns of your audience, always be aware of the delicate balance between too much and too little navigation. Testing a few *navigation mockups* is good way to make sure that you’re on the right track.

**Visualize it: navigation mockups**

As with any part of the planning process, it’s desirable to create a few visual documents to evaluate possible navigation systems for your site. These *navigation mockups* are usually black-and-white sketches of where the navigation elements might be positioned, how they might be labeled, and how they might behave. It’s much easier to make functional decisions when the color, typefaces, and design of navigation elements do not get in the way. Using simple black-and-white block diagrams solicits functional feedback rather than personal opinions on design.

It is a good idea to create a mockup of an interior page of your site and test it on a member of your target audience (or any outsider you can get a hold of). Show your test subject the page and ask questions like “Where do you think you are in this site?” and “How might you have gotten there?” You might even inquire what sort of information the user would like next, and how they anticipate being able to find it. Often, navigation

<sup>5</sup> One of the most effective urban navigation studies was conducted by the French psychologist, Pailhous. He found that Paris cab drivers found their way by a very limited number of routes, related to basic points. (*Plan Your Route*, Victor Selwyn, 1987, David & Charles)

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mockups are only presented to the client for approval. But getting some outside input early on in the design process will save you some costly redesigns later on.

### Sample navigation mockup

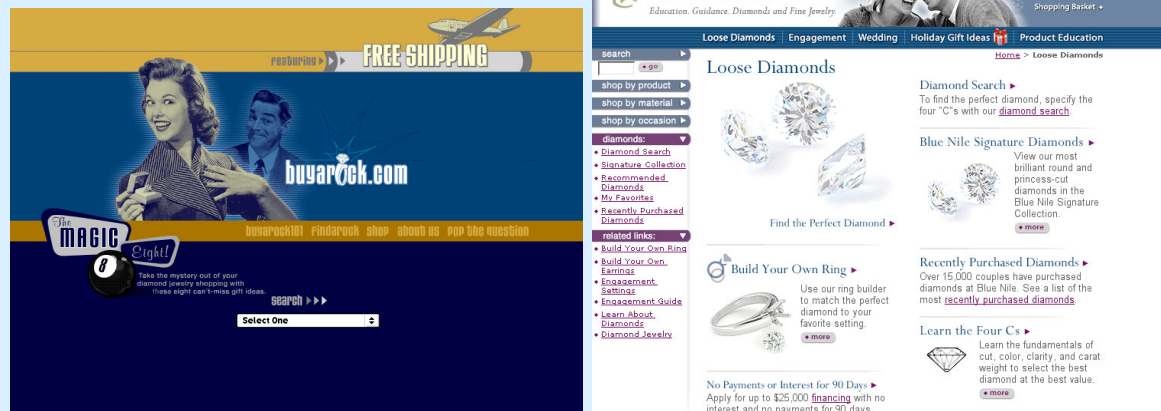


## Finding Your Personality

So far the majority of planning we have done has been for the organization and interaction of our site. But it can also help to plan some basic aspects of our presentation as well. In particular, we want to get some initial ideas for the *personality* of our site. The personality of your site determines how it speaks to your audience. Is it screaming, “Get excited about football!” or does it calmly say, “Don’t worry, I know getting a home loan is difficult, so I’m going to make it as easy as possible for you.” Each of these sites has a different “voice.” The voice is reflective of the main message of your site and is “spoken” in a manner appropriate to your audience.

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## Diamonds Anyone?



Though both these sites sell diamonds, they do it in two distinct ways. The personality of each site is evident in not only its visual presentation, but also in the organization and interaction. Read the category labels and notice the different manners in which you pick out a diamond ring on each site.

Though the personality of your site is most quickly communicated through the visual presentation (I will discuss this in depth in Chapter 5), it is also evident in the organization, the content, and even the manner in which your text is written. Every aspect of your site, from navigation to color choices, contributes to the site's personality. When all the elements of your site work together to reinforce a common personality, we refer to that as a *unified Web experience*. A unified Web experience connects the interaction, organization and presentation of your site into a cohesive whole. This emphasizes the sense of being in "one place" and establishes a dialog with your audience. "We're going to make shopping for diamonds fun." "We have the technical expertise to solve even your toughest problems." But the most important role of your site's personality is to communicate the big picture of your site. Who are you, and what do you can do for me? How are you different (better) than the competition? Given all the things today's Web sites need to do (offer services, provide information, e-commerce, and so on), it is very easy to get wrapped up in the details and lose sight of the big picture.

### Describe yourself

Make sure that the personality you choose for your site is self-descriptive. That is, it tells your audience who you are and what makes you unique. Thinking in terms of real-world examples can help a lot. Rooms, buildings, cities, cars, people,

clothes, furniture, and so on all have distinct traits that make them special. Pay attention to your surroundings and take note of the things that bring your site to mind or that seem to “reflect” or could “speak for” your site. More often than not, there is no one item that perfectly embodies your site’s message in a manner appropriate to your audience, but a combination of several items might just do the trick. For example, if your site’s specialty is Italian cooking, try to visualize the elements that give an Italian restaurant tucked away in a comfortable nook of Little Italy its charisma. Is it the old-world sepia photographs, the poor lighting, the sturdy tables of heavy oak, or the exuberant staff (with accents and all)? Or perhaps an upscale place with tuxedoed staff and a world-class wine cellar is more appropriate, or a family atmosphere with lively music and lots of “flair”? Though all three of these establishments may offer fine cooking, they all have different personalities. Which one is right for you depends on your audience and the message of your client.

As the Web becomes more and more crowded, the importance of personality increases. With millions of sites to choose from, standing out in this “cyber-crowd” is not an easy task. Many sites have gone to extreme measures to be different. Sites use unique and catchy names like “Yahoo!” and Monster.com and air Super Bowl commercials with memorable images or outrageous situations. But spending millions of dollars on strange TV spots and using “wacky” nomenclature are not guaranteed to provide a devoted audience. Having a different voice from the competition lets your site be noticed and remembered, but doesn’t help to build relationships with your audience. Rather a unified Web experience with a consistent and appropriate personality does. Try thinking of your favorite sites. What makes them stand out? Why do you keep coming back to them? How do they “speak” to you?

### **Visualize it: sample combinations**

When planning your site, keep a record of the images, text, or objects that reflect several possible appropriate personalities and tones for your site. This process can be formalized by creating *sample combinations*. Sample combinations are created by taking photographs, cutting snippets out of magazines, or grabbing screen images, and combining what you find into a single document. These documents allow you to communicate your ideas to others (including your client) and get reactions from your intended audience. Is this an appropriate tone for the information we are presenting? What



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do these images bring to mind? Excitement? Calm? Sample combinations are an effective means for visualizing some initial ideas for the personality of your site and can jumpstart the visual design process by presenting an appropriate “flavor” for the site.

### Sampling your site’s flavor



Sample combinations, like the one to the left, can help articulate some initial ideas for your Web site’s personality. Though this example uses images from magazines, pretty much anything is fair game: photos, sounds, a writing style, and more. The medium or the subjects (in this example, mostly physical objects) of your sample combinations are not relevant. Instead the style (in this case a retro/streamline look) that they personify is.

## Remembering Your Limitations

The Web is intended to be accessible to the entire world. Achieving such an extraordinary goal ultimately requires a lot of compromise on the part of Web consumers and providers. In order to reach a worldwide audience, the Web has many restrictions and constraints. These restrictions often arise from the assortment of different technologies that make the Web run, but they also come from the various cultures accessing the Web from around the world.

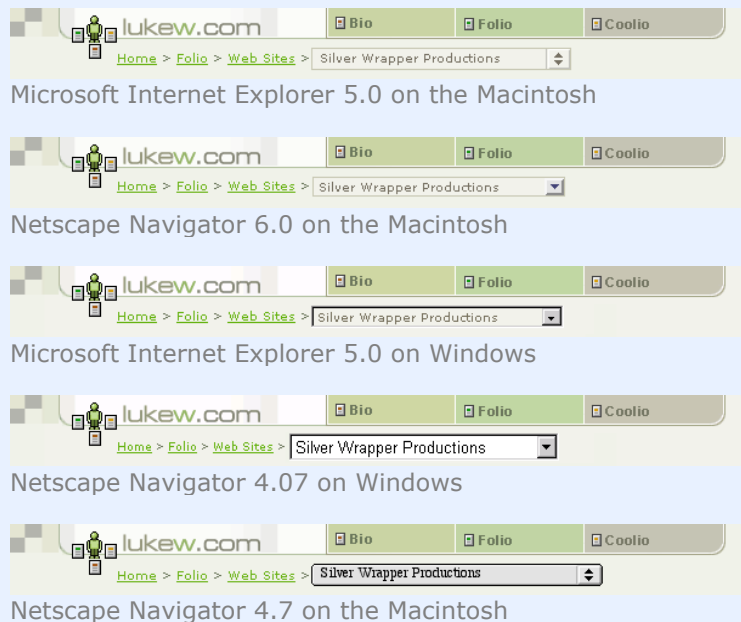
### Think technically

Thousands of technical variations on the side of Web consumers can lead to striking differences in our Web site’s presentation and interaction. Not all Web access is the same, and as a result, you cannot count on your site looking and working in the same way it does on your machine at home. Different versions of Web browsers, operating systems, Internet connections, hardware, and more contribute to an enormous amount of variables. It is impossible to design for every specific hardware and software combination your audience might be using. Instead, designers need to come up with designs that are flexible and support “graceful

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degradation.”<sup>6</sup> When users visit a site with the most up-to-date technology, they get a design that takes advantage of the latest features in presentation and interaction. However, when users visit the site with older technology that cannot support advanced features, the site still works, minus a few bells and whistles. In other words, the site loses some niceties (of presentation and interaction), but remains usable: It degrades gracefully. To use our language analogy, some words are lost from our vocabulary, but enough basic ones remain to get our message across. While it may be true that a certain word was the optimal way to express ourselves, we still have a few others that are “good enough.” When we decide just how our sites will vary (and degrade), we need to keep several factors in mind: monitors, computers, browsers, plug-ins, and Internet connections.

### Grace of degradation



Not all Web browsers display the same code in the same ways. Most notably, older browsers do not support many style features. The example on the left shows how the navigation for LukeW.com appears on several different browsers (with different style sheet support) and platforms. Note that despite differences in font size and drop-down menu presentation, the navigation retains its functionality across multiple browsers and platforms. Though the presentation is far from ideal in the bottom-most setup (the drop down becomes visually dominant: remember navigation should be unobtrusive), a user can still get to the content they need.

Monitors can vary in many different ways. There are variations in the overall display area of monitors: fifteen inches or a twenty-two inch wide screen format? On each one of those monitors we have resolution differences: 640 by 480 pixels or 1024 by 768? 256 colors or millions? Also each monitor has its own settings for brightness and contrast, likely to be set to each individual user's preferences. And that's not to mention the

<sup>6</sup> I am not sure who coined the term “graceful degradation,” but Jeffery Veen presents the theory behind it quite well in his book *The Art and Science of Web Design* (2000, New Riders).

gamma differences between operating systems that make Windows machines seem substantially darker than the display on a Macintosh. One thing this tells us is that very subtle variations in color might not get noticed by everyone in our audience. Therefore, important visual cues should not rely on minute color distinctions. Similarly, the differences in screen resolution tell us that we cannot count on everyone in our audience having 800 pixels of vertical space available for our Web site. Instead, we need to create layouts that communicate clearly with a variable amount of pixel height and width.

Differences in operating systems can alter more than just the screen gamma. Typefaces, interface elements, and text sizes are all subject to change as well. We need to be aware of how the fonts we have chosen for our layouts appear on different machines. Comparable differences result from different Web browsers. Text-sizes and interface elements appear differently in even the two most popular browsers: Microsoft Internet Explorer and Netscape Navigator. Each of these browsers has multiple versions, some of which support most presentation and interaction features and others that do not. (As an extreme example, Netscape 2.0 does not even support frames.) In addition, users can adjust settings within each browser such as background color, image display, text sizes, and more.

Scared yet? Don't be. It isn't too difficult to account for the many factors of the Web. The first step is admitting that they exist. Many designers fool themselves into believing everyone on the Web sees their sites the same way that they do. Once you accept the fact that things will change from user to user, you can begin designing in a manner that supports graceful degradation. (More on this in Part 3.) But we're still not out of the woods yet. Designing for everybody does not just mean designing for different computers; it means designing for different people. And when the world is your audience, trust me, there are differences.

### **Think globally**

Because the Web is World Wide, it provides the opportunity to communicate with people of all nations and cultures. While a global audience can be an asset, it is also a responsibility.

Edward Hall, in his book *The Hidden Language*, said, "Culture is communication." What he meant is that many factors beyond speech need to be considered when communicating cross-culturally. Space, time, intonation, and more mean different

things to different people, and one must always be aware of the implications. When we communicate online, we need to especially be aware of how our colors, and symbols are perceived and interpreted. For example, in the United States, an owl is often associated with wisdom, whereas in Central American and Celtic cultures, it is a symbol of misfortune. (Apple Computer, 1992) In Eastern Asia, white is the funerary color of choice, while in the United States, we wear black. These types of distinctions also apply to everyday objects, mannerisms, behaviors, and more. If you're planning on reaching a global market or want to focus on a particular country or region, it is a good idea to understand the cultural implications of your designs. Make sure you understand what your site is "saying," especially when it speaks to a foreign audience.

### **List it: product requirements**

Yes, it's time to add another document to our growing Web project folder. When deciding on the global and technical limitations your site needs to accommodate, it is a good idea to list the criteria you need to meet in a product requirements document. A product requirements document is nothing more than a listing of the constraints your audience is likely to bring to your site. Do some of them still use 256-color monitors? Are most of them accessing the Web through low-speed modems?

A product requirements document continually reminds you of the limitations of your audience and outlines technical platforms on which your site should be tested. Some Web sites cater to visitors with high-speed "broadband" connections and offer services that users with slow modem dial-ups cannot easily use. These sites can make use of page elements that take longer to download, such as extensive video or sound files. Other sites target a Web-savvy audience that prides itself on having the latest Web technology. These sites tend to use features that older browsers cannot display. In both these situations, the audience has determined what level of constraints the site must adhere to. When you design your sites, make sure that you are meeting the constraints of your audience not your personal computer.

### **Scheduling Your Progress**

Even though it is now common to think of projects with tight deadlines as happening in "Internet time," a Web project could very well move sluggishly if you do not plan ahead. Just about every Web site project I have been involved with has slowed

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down at the same stage: content delivery. Even site redesigns, where the majority of content already exists, slow down when content needs to be updated or created anew. This can quickly turn Internet time into waiting time.

But just like the wait at your doctor's office, this wait is for your own good. Perhaps you have heard the expression, "On the Web, content is king." Most visitors to your Web site are coming for just that: content. (Currently there is a big trend toward offering services online, but that is what Chapter 8 is about.) They need specific information, or they want to get a basic sense of what is happening or new. Therefore, it is extremely important to meet your audience's expectations and deliver fresh and informative content. You need that content, no matter how long the wait. We have all encountered Web sites that seem more like "ghost sites." Someone put them up and then seemingly walked away. (If you look closely, you might even see cobwebs forming on the pages.) These abandoned sites are a testament to the challenges involved with gathering and maintaining quality content.

Content originates from various sources. In a corporation, each department might be responsible for a different portion. Getting all these departments to coordinate their efforts in a timely manner is a challenge. Also, each department is likely to be busy with its day-to-day chores, so delivering the content for a Web update often gets put on the back burner. That being said, the importance of good Web content is currently recognized by most organizations. These organizations have taken steps to ensure that content on their Web site is timely and up to date. Some have introduced a full-time employee that works with each department to get their information into a Web-ready format, a position that requires someone skilled at writing in the nonlinear style of the Web. While this is a great asset, it is often not enough.

Not only do the sources of content vary, the content itself varies. Product photos, employee bios, technical white papers, and more make up the content of an average business site. Generating these diverse items involves different timelines and production schedules. Photo shoots and interviews might be necessary, not to mention copy-editing and technical illustrations. Regardless of the type of site you're building, you need to consider the fact that content is going to come in different shapes and sizes and at different times.

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At this point, you might be saying, “My client already has all the content they want to put online ready.” While it might be true that a good amount of content may already exist in one form or another, it can still be a time-consuming task to get this information into a “Web-ready” format: one that is reflective of the site organization you have set up. Length, wording, and relevance are just some of the factors you need to consider. Also, there is Web-specific content, which often needs to be created from scratch. Given all the challenges of content delivery, you would be well advised to think through the process ahead of time.

**Visualize it: content delivery schedule**

To avoid delays and keep everyone involved with a Web project informed, you need to develop a *content delivery schedule*. A content delivery schedule is usually a listing of the site organization with entries for who is responsible for each portion of the content’s completion and when. Remember to include concrete and realistic deadlines. (Nothing gets things moving like the presence of an imminent deadline.) A clear understanding (between content generators and the Web production team) of when things are due will ensure that no one is playing the role of “bottleneck” and holding up your launch date.

**Content Delivery**



This very simple content delivery schedule lists each Web page (for the Computer Science Department Web site we saw earlier), the person responsible for creating that particular page’s content and a due date.

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## Spreading it Out

LukeW.com 3.0 structure				
index.html	bio	about_lukew.html about_lukew	development_services.html design_services.html technical_specs.html	
		construction.html contact_info.html luke_vroblewski.html project_history.html resume.html join_list.html clients_list.html img		
	folio	data_visualizations.html game_design.html game_design illustrations.html illustrations	img tony_sambino.html tony_sambino img justice_brennan.html madre_jeronima.html mine_eyes.html water_seller.html octopus_renderings.html retro_bowlers.html img bibe_identifier.html fc_trades.html gslls_finder.html kelloggs_intranet.html nosa_opie.html 3d_data.html	character_creation.html
		interface_design.html interface_design	access_interactive.html access_interactive2.html kan_odrom.html transistors.html thesis_racer.html img iir_dhtml.html octopus_system.html sitemap_system.html lukew2_nav.html jazzfest_nav.html img	
		multimedia_solutions.html multimedia_solutions	web_applications.html web_applications	slide_show.html web_apps.pps img js
		navigation_systems.html navigation_systems	thesis_summary.html weblocation_aesthetics.html img	
		presentations.html presentations	@art_portal.html concept_mapping.html decision_making.html science_portals.html img	
		system_architectures.html system_architectures	bob_marley.html camo_cube.html cdg_site.html computer_science.html judah_school.html lukew_2.html martian_geology.html nosa_web.html silver_wrapper.html dor_comps.html img	
		web_sites.html web_sites	visualusability.html visualusability	chapter.pdf outline.html
		writings.html writings	info_management.html info_management	abstract.html current_systems.html introduction.html opie_approach.html references.html img
			web_applications.html web_applications	abstract.html introduction.html thesis.html sources.html design_considerations.html design_guidelines.html discussion.html references.html
			interaction_design.html design_education.html img	

This partial content diagram for the LukeW.com site serves as an organization schematic and a progress diagram. The green, yellow, and red dots indicate the status of content, and the red triangles contain notes related to how the content will be generated. The cells with blue background colors indicate folders, the yellow background colors detail future content, and a gray background indicates content that is no longer a part of the site. Though this spreadsheet is a specific solution to a particular site, the kinds of data presented are more than likely the same information you will need in your content-delivery diagrams.